Homeowners

Shopping for value, comfort, and quality

Comfort. Economy. Durability. Performance. Some homes force you to choose. Energy-efficient homes deliver it all. And as a homebuyer, you deserve, and should demand, the whole package.

One way to know you have found an energy-efficient home is to look for the ENERGY STAR® label. ENERGY STAR has taken much of the guesswork out of buying new homes and other products. ENERGY STAR-qualified new homes are built to strict energy-efficiency guidelines using proven technologies and construction practices. Your builder also may have incorporated other building features that go beyond ENERGY STAR criteria for even more energy savings, and for greater health and comfort.

ENERGY STAR features should be included in all houses from lower cost starters to high-end customs. This chapter gives you an introduction to the technology that makes these houses work, how much they cost, how to pay for them, and a checklist of what to look for in new homes. The features described here are specifically designed for the hot and humid climate found in the Southeastern United States.

You're in Good Company

The companies that build ENERGY STAR homes are among the best and largest in the nation. Over 2,000 builders work with ENERGY STAR in the United States. And about 50% of the largest 100 builders in the nation have at least one division building ENERGY STAR qualified homes. Thousands of small companies also build ENERGY STAR homes. And many of these companies are working with Building America.

In addition to discussing the minimum requirements for attaining ENERGY STAR, this packet suggests other techniques developed within the U.S. Department of Energy's Building America program. These techniques can help you avoid common construction problems that occur in the hot and humid climate. The recommendations in this chapter are based on Building America's building science research on over 25,000 homes in 34 states encompassing every climate region in the nation.

QUICK TIPS | HOMEOWNERS

- Look for the ENERGY STAR label for government-endorsed proof that a home is energy efficient.
- Learn why an energy-efficient home is usually a higher quality home all the way around.
- Use the enclosed checklist to shop for energy-efficient homes.
- Use the nationally recognized HERS rating to know just how efficient the homes you are considering really are.
- Own a home you can be proud of —energy-efficient homes are good for the environment.

Building America works with the nation's premier building scientists to conduct research and share knowledge with builders to help build better homes.

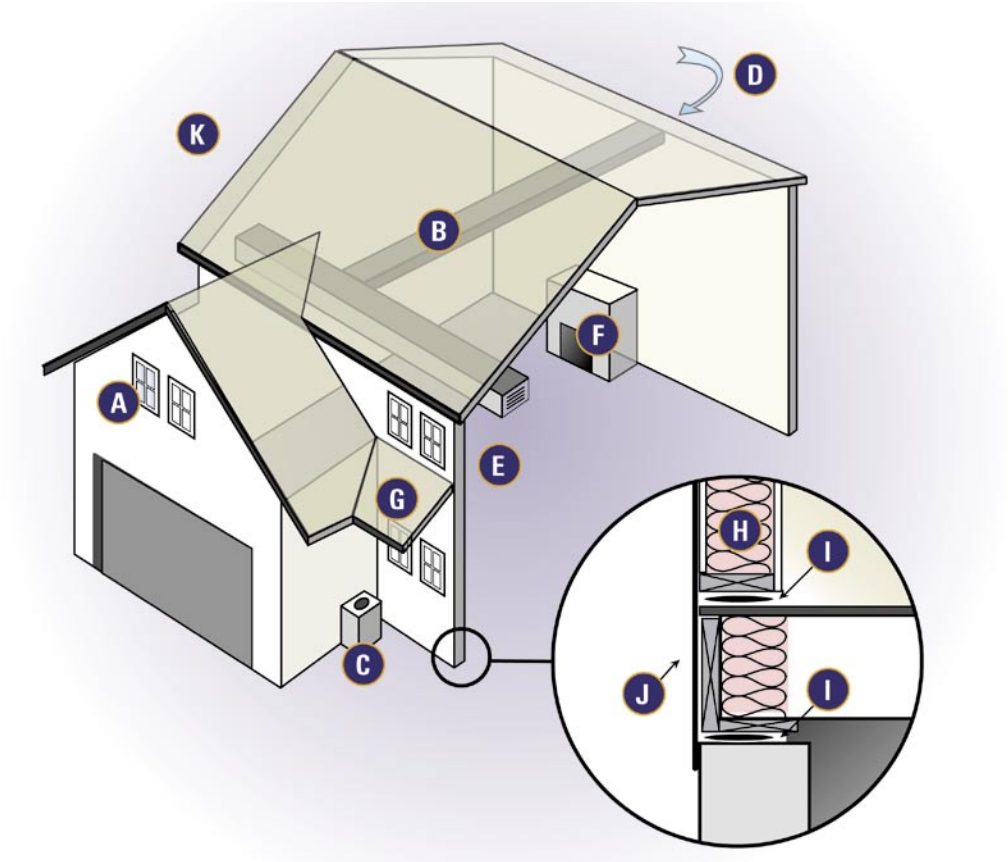
If you are looking for energy-saving features in your new home you're in good company. Recent homebuyer surveys have found that energy efficiency is the top upgrade that homebuyers choose in new homes. And homebuyers in Phoenix rated energy efficiency as the number one reason related to the house itself in determining their satisfaction with the production builder recognized by *Professional Builder* magazine as having the top customer satisfaction in the nation (2003). This same builder won the J.D. Powers and Associates top ranking for customer satisfaction in 12 of 21 markets in the United States. The winner, Pulte Homes, is a Building America Partner that brands its homes using ENERGY STAR.

How Quality Houses Perform

You don't want to spend the first several months in your new home fixing construction problems. Not long after unlocking a new home's door for the first time comes the reality of keeping the house and its inhabitants happy and comfortable. You'll save time, money, and personal energy when you buy a house that works from the start. The building materials and quality that go into an energy-efficient home help to keep temperatures even, the air clean, and the house dry, quiet, and draft-free. The checklist near the end of this chapter provides details of what to look for in quality home construction. Figure 1 provides an overview of features Building America recommends to help you avoid problems, while saving time, money, and energy.

FIGURE 1: Hot & Humid Design Features

All of these features save energy. Read the descriptions at right to see what else they do.



Hot & Humid Design Features

A. Efficient Windows: help to control and reduce ultraviolet light that can fade carpets and furniture, helping to keep your belongings looking like new and keeping window areas cooler and more comfortable to sit near. Window flashing protects against water leaks.

B. Compact and Tightly Sealed Duct Runs: shorter runs mean less to go wrong and fewer air leaks to put air where it is intended to go with fewer contaminants like humidity and dust from attics or crawlspaces. Leaky ducts are a major contributor to mold problems. Return air ducts in every room ensure balanced air pressure for less drafts and more balanced temperatures throughout the house. Put ducts in conditioned space, if possible.

C. Right-Sized and High-Efficiency HVAC Equipment: costs less to install than bigger equipment, saves energy, and is designed to comfortably handle heating and cooling loads.

D. Ventilation: exhaust fans remove moisture and pollutants. A controlled, filtered air intake ensures pplenty of fresh air. A fresh air intake is not an ENERGY STAR requirement but it is recommended.

E. Dehumidifier: ensures that indoor humidity levels are kept at a comfortable level. This measure is not an ENERGY STAR requirement but is recommended by Building America.

F. Sealed Combustion Appliances: reduce moisture buildup and ensure the removal of combustion gases. We recommend against non-vented combustion appliances such as non-vented fireplaces or heaters.

G. Overhangs: provide shade and direct water away from the house. Overhangs are not required by ENERGY STAR but are a sign of thoughtful design.

H. Insulation: holds comfortable temperatures in conditioned spaces and helps control noise. For insulation level recommendations visit www.ornl.gov/sci/roofs+walls/insulation/ins_16.html

I. Air Sealing: stops drafts, helps keep humidity and garage contaminants out of the house, and creates a barrier to rodents and insects.

J. Well-Designed Moisture Barriers: avoid expensive structural damage and help stop humidity, mold, and mildew.

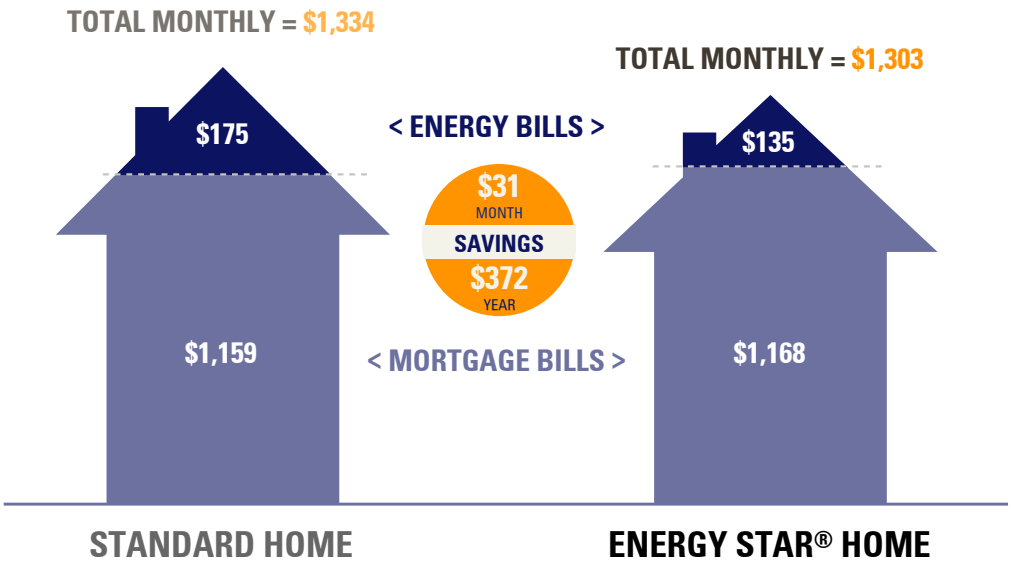
K. Building System: Perhaps the best thing about buying a system-designed house is that all of the parts are designed to work together. This can save you money on the purchase price, and it also means a durable and comfortable system, one that will help avoid maintenance and repair costs down the road.

An Energy-Efficient Home Will Cost You Less

As with any upgrade, precisely how much is paid for an energy-efficiency upgrade will depend on many factors. Some builders make energy-efficiency features part of their base price, so you pay no more additional cost. Others will sell you a specific upgrade package at a predetermined cost. Depending on how the builder structures his costs, the home's size and design, and the prevailing cost of building materials, the additional cost of a system-designed energy-efficient home may range from zero to $1,500 or more.

But even if you pay more up front, the good news is you are likely pay less for an energy-effiicient house on a monthly basis, if you consider the cost of energy. Here's an example showing why:

FIGURE 2: Monthly Cost Comparison



Our example assumes a base price on the house of $200,000, an upgrade cost of $1,500, and a 30-year mortgage at 6% interest. We also estimate that monthly energy bills will be about $135 after energy savings of about $40 per month in the energy-efficient home.

Your builder, realtor, or lender should be able to help you work through the savings for your house based on actual features, costs, and interest rates.

Energy-Efficient Mortgages Can Help You Get More for your Money

Lenders recognize that owning an energy-efficient home makes financial sense and they have developed energy-efficient mortgages to encourage consumers to purchase these types of homes. The loans work by allowing consumers to borrow more than they would typically qualify for.

"You don't know the quality of life you can experience until you're in one of these homes. Our quality of life has improved tremendously and we'll realize energy cost savings for years to come."

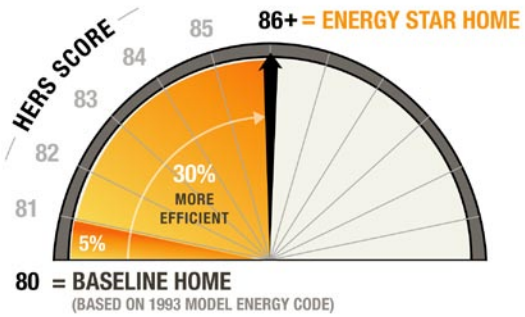
John Russo, purchased an ENERGY STAR home in 2002, as quoted in the Boston Herald, December 6, 2002.

According to the U.S. Environmental Protection Agency, which manages the Energy Star program with the U.S. Department of Energy, 100,000 new homes have now earned the Energy Star designation, saving these homeowners a total of $26 million in energy costs every year.

The following features for energy-efficient loans are taken from Fannie Mae, the nation's largest source of funding for mortgages. You can learn more about Fannie Mae at www.fanniemae.com.

- Energy-efficient mortgages (EEM) are available for both purchase and refinance in conjunction with most Fannie Mae first mortgage products, including conventional fixed-rate and adjustable-rate mortgages.
- Monthly savings resulting from energy efficiency can be used to qualify borrowers for a larger mortgage. This means consumers can buy more home in the form of energy efficiency or other upgrades.
- The EEM can be used with many Fannie Mae mortgage products. The guidelines of the selected Fannie Mae mortgage apply, with the EEM allowing for the projected energy savings to provide an adjustment to the loan-to-value and qualifying ratios that favor the borrower.
- To qualify, you must obtain a Home Energy Rating System (HERS) report, which provides a rating of the energy efficiency of the home and estimates the resulting cost savings using average utility rates and usage data. See *What's the Score?* below for more information on HERS. Building America recommends that every home receive this type of rating and many ENERGY STAR homes were rated in order to qualify.

FIGURE 3: HERS Score



What's the Score?

The Home Energy Rating System (HERS) is a nationally recognized method of evaluating a home's energy performance. Rating professionals are people trained in preparing HERS scores and accredited by the Residential Energy Services Network, found on the web at www.natresnet.org.

A house built to the 1993 Model Energy Code has a HERS score of 80. This is considered a base house for a HERS comparison. Each one-point increase in the score equates to a 5% increase in energy efficiency in heating, cooling, and water heating. The homes described in this document are similar to ENERGY STAR homes and must be at least 30% more efficient than the base house and so would have a HERS score of at least 86. In some states, greater HERS scores are required because of stringent current building codes.

HERS scores can be used to compare across houses even if the houses differ in design, size, or type of HVAC equipment. Even if homes are not participating in labeling programs like ENERGY STAR, the HERS score can be used to gauge energy efficiency. See the *Designers* section for more information on HERS.

Consumers using Federal Housing Administration (FHA) loan insurance should consider FHA's Energy Mortgage Program. This program helps borrowers to include energy-efficiency features in their home by stretching the size of the loan they may qualify for without increasing their down payment. An energy-efficient mortgage is one of many FHA programs that insure mortgage loans. FHA encourages lenders to make mortgage credit available to borrowers who would not otherwise qualify for conventional loans on affordable terms (such as first-time homebuyers) and to residents of disadvantaged neighborhoods (where mortgages may be hard to get). To learn more about FHA programs visit the web site at www.hud.gov/offices/hsg/sfh/eem/energy-r.cfm.

Some builders are working with lenders to offer special mortgage terms, such as a lower interest rate, to help buyers of energy-efficient homes. Ask your builder if they have any special programs.

Guaranteed Energy Costs and Comfort

Some builders go even further than doing a great job of constructing an energy-efficient home. Some guarantee it. Builders who guarantee their homes are willing to tell buyers how much energy the home should use, and they guarantee these levels will not be exceeded. These guarantees are backed up with payments if limits are exceeded. Builders can work with insulation companies or other partners to offer guarantees or caps on their home's energy costs, or they may develop their own programs. Some cover room comfort by guaranteeing that the temperature at the thermostat will not vary by more than 3 degrees at the center of any room served by that thermostat. A Building America team helped to develop these programs. Information on three of these programs can be found at:

- Environments for Living – www.eflhome.com/index.jsp
- Engineered for Life – www.us-gf.com/engineered.asp
- The Energy Use and Comfort Guarantee – www.artistichomessw.com/guarantee.htm

"Knowing that 100% of our homes exceed the minimum standards makes a statement to our buying public that we are confident this is the way of the future and not a fad or style."

Andrew Nevitt, Architect, Medallion Homes, San Antonio, Texas

And There's More – More Green for You and More Green for the Planet

Where else can you find an investment that delivers monthly dividends, makes you more comfortable and your house more durable, comes with its own financing incentives, and may even have guaranteed energy performance? ENERGY STAR homes give you all this, plus they are good for the environment. Just one ENERGY STAR qualified new home can keep 4,500 pounds of greenhouse gases out of our air each year.

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Last year, thanks to programs like Energy Star and other energy efficiency measures, Americans cut their energy bills by more than $7 billion, along with saving enough energy to power 15 million homes. The greenhouse gas emissions saved by these steps was the equivalent of taking 14 million cars off our country's roads. Visit the ENERGY STAR web site at www.energystar.gov to learn more about how ENERGY STAR is helping the environment.

What to Look For

Take the *Homebuyer's Checklist* at the end of this chapter with you when you're shopping for a new home. Ask your builder or salesperson to help you consider each item. For a more detailed checklist, go to *Appendix I*. You may want to ask to see houses under construction to see how some measures are installed. The builder or realtor may have models and displays to help you see other features. Not all of the measures will apply to every home (for example, homes don't typically have more than one kind of heating system). Check the features that are most important to you. We've left some blank spaces at the end of the checklist in Appendix I so you can fill in features that you want to remember to check that may or may not be energy related.

If You're Building a Custom Home

A great advantage to building a custom home, or ordering your home before it is built, is that you can work with your builder or designer to get the features you want. Give your builder or designer this Best Practices Guide. It contains everything they need to design and build a durable and comfortable energy-efficient home.

Sources & Additional Information

- J.D. Power and Associates. *J.D. Power and Associates 2003 New Home Customer Satisfaction Study*. West Lake Village, California. 2003.
- Johnston, David. 2001. "Buyer Green." Housing zone.com. www.housingzone.com/topics/pb/green/survey/buyer.asp#

Homebuyer's Checklist

Use the following checklist to compare house features in different homes you visit. A more detailed checklist is available in Appendix I.

MEASURE	Building America	Builder #1	Builder #2	Builder #3
BUILDER SERVICES AND RATINGS				
ENERGY STAR Rated	Yes			
HERS Score of **86 or greater**	Yes			
Energy Performance Guarantee	Good Idea			
Energy Efficient Mortgage	Good Idea			
Provides Owners Manual	Yes			

If you can answer **yes** to the above questions you will have a good energy performing home. *Note that in some states, due to more aggressive energy codes, ENERGY STAR may require HERS scores greater than 86.*

VENTILATION				
Controlled fresh air provided in the house	Yes			
Quiet Exhaust vents in bathrooms	Yes			
Quiet Exhaust (not recirculating) vents in the kitchen	Yes			
Supply and return air vents in each room	Yes			
WINDOWS				
Windows flashed to help repel water	Yes			
Windows rated .35 U-factor and .35 SHGC*	Yes			
COMBUSTIONS APPLIANCES				
Combustion appliance exhausts vented to the outside (except ovens)	Yes			
Hardwired carbon monoxide monitors included for every 1000 square feet of living space if combustion appliances or an attached garage are present	Yes			
DEHUMIDIFIER				
Dehumidifier present or the house has been designed so one can easily be added	Yes			
MORE TO LOOK FOR TO ENHANCE ENERGY EFFICIENCY				
ENERGY STAR qualified light fixtures	Good Idea			
ENERGY STAR qualified refrigerator	Good Idea			
ENERGY STAR qualified dishwasher	Good Idea			
ENERGY STAR qualified clothes washer	Good Idea			
ENERGY STAR qualified dehumidifier	Good Idea			

*Solar Heat Gain Coefficient